Pending Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-28 (canceled).

Claim 29. (currently amended) A method for treating a mammal to resist early vein graft failure comprising,

a) introducing into endothelial cells of an autologous vein graft from the mammal an effective amount of at least one nucleic acid encoding one of the following agents: thrombomodulin (TM), NF-κB inhibitor, or a functional fragment of the TM; provided that when the agent is thrombomodulin, the nucleic acid further encodes the NF-κB inhibitor, wherein the introducing is performed *ex vivo* or by direct injection into the graft, and

b) transplanting the vein graft into the mammal.

Claim 30. (currently amended) A method for engineering a vein graft of a mammal to resist early graft failure, the method comprising:

a) introducing into endothelial cells of an autologous vein graft from the mammal an effective amount of at least one nucleic acid encoding one of the following agents: thrombomodulin (TM), NF-κB inhibitor, or a functional fragment of the TM; provided that when the agent is thrombomodulin, the nucleic acid further encodes the NF-κB inhibitor, wherein the introducing is performed *ex vivo* or by direct injection into the graft, and

b) transplanting the vein graft into the mammal.

Claims 31-32. (canceled).

Claim 33. (currently amended) The method of claim 29 or 30, wherein the introducing ~~method~~ is performed on the graft *in vivo*.

Claim 34. (currently amended) The method of claim 29 or 30, wherein the transplanted graft has sufficient activated protein C (APC) activation as determined by a standard protein C assay to prevent or treat the early graft failure.

Claim 35. (previously presented) The method of claim 34, wherein the level of protein C activation as determined by a standard protein C detection assay of the treated graft is at least about one order of magnitude higher than a control vessel.

Claim 36. (previously presented) The method of claim 35, wherein the higher protein C level of the treated vascular graft is detectable for at least about a week.

Claim 37. (previously presented) The method of claim 34, wherein the early graft failure is accompanied by thrombosis.

Claim 38. (previously presented) The method of claim 29 or 30, wherein the nucleic acid is inserted into a cassette.

Claim 39. (previously presented) The method of claim 38, wherein the cassette includes a promoter.

Claim 40. (previously presented) The method of claim 39, wherein the cassette is inserted into a vector.

Claim 41. (previously presented) The method of claim 40, wherein the vector comprises sequence from an adenovirus, retrovirus, or adeno-associated virus.

Claim 42. (previously presented) The method of claim 41, wherein the vector is a replication defective adenovirus.

Claim 43. (previously presented) The method of claim 29, wherein the nucleic acid encodes at least one other anticoagulant molecule.

Claim 44. (previously presented) The method of claim 43, wherein the anticoagulant molecule is thrombomodulin or a functional fragment thereof.

Claim 45. (previously presented) The method of claim 29 or 30, wherein the mammal is susceptible to an inflammatory or immunological stimulus and the method further comprises administering a therapeutic amount of at least one anti-coagulant, antithrombotic, or thrombolytic drug to treat or prevent that stimulus.

Claim 46. (currently amended) The method of claim 45, wherein the drug is administered before step a) or after step ~~c~~b) of the method.

Claim 47. (previously presented) The method of claim 46, wherein the anti-coagulant drug is coumadin.

Claim 48. (previously presented) An engineered vein graft produced by the method of claim 30.

Claim 49. (currently amended) The engineered ~~vascular~~ vein graft of claim 48, wherein the vessel is an autologous saphenous vein graft (SVG).

Claim 50. (canceled)

Claim 51. (canceled)

Claim 52 (currently amended) A method for treating a mammal to resist early vein graft failure comprising,

a) introducing into endothelial cells of a an autologous vein graft from the mammal an effective amount of at least one nucleic acid encoding at least one of the following agents: thrombomodulin (TM), NF-κB inhibitor, or a functional fragment of the TM ; provided that when the agent is thrombomodulin, the nucleic acid further encodes the NF-κB inhibitor, wherein the introducing is performed *ex vivo* or by direct injection into the graft, the nucleic acid being

expressed from a recombinant adenovirus vector comprising a first adenovirus inverted terminal repeat (ITR) operably linked to the nucleic acid, and

b) transplanting the vein graft into the mammal.

Claim 53 (previously presented) The method of claim 52, wherein the recombinant adenovirus vector further comprises a cytomeglovirus promoter operably linked to the nucleic acid.

Claim 54 (previously presented) The method of claim 52 or 53, wherein the recombinant adenovirus vector further comprises a second ITR operably linked to the nucleic acid.

Claim 55 (previously presented) The method of claim 52, wherein the recombinant adenovirus vector is AdTMh5.

Claim 56 (currently amended) A method for treating a mammal to resist early vein graft failure comprising,

a) introducing into endothelial cells of ~~a~~ an autologous vein graft from the mammal an effective amount of at least one nucleic acid encoding at least one of the following agents: thrombomodulin (TM), NF-κB inhibitor, or a functional fragment of or the TM ; provided that when the agent is thrombomodulin, the nucleic acid further encodes the NF-κB inhibitor, wherein the introducing is performed *ex vivo* or by direct injection into the graft, the nucleic acid being expressed from a recombinant adeno-associated virus (AAV) vector comprising operably linked to an adeno-associated virus inverted terminal repeat (ITR) and the nucleic acid, and

b) transplanting the vein graft into the mammal.

Claim 57 (previously presented) The method of claim 56, wherein the AAV vector further comprises an operably linked Rous sarcoma virus long terminal repeat promoter.

Claim 58 (previously presented) The method of claim 57, wherein the AAV vector is AAV_2 hTM.

Claim 59 – 67 (cancelled)

Claim 68 (previously presented) The method of any one of claims 29, 30, 52, 56 or 59 further comprising introducing into cells of the graft a nucleic acid encoding thrombomodulin (TM) or a functional fragment thereof.

Claim 69 (previously presented) The engineered graft of claim 48 further comprising cells comprising an introduced nucleic acid encoding thrombomodulin (TM) or a functional fragment thereof.

Claim 70 – 72 (cancelled)